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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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09/04/2001

Kenichiro Kami

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9102

23400 7590 11/21/2007  
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RESTON, VA 20191

EXAMINER

DOVE, TRACY MAE

ART UNIT

PAPER NUMBER

1795

MAIL DATE

DELIVERY MODE

11/21/2007

PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

## Office Action Summary

Application No.

09/944,150

Applicant(s)

KAMI ET AL.

Examiner

Tracy Dove

Art Unit

1795

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 24 September 2007.
- 2a) ☒ This action is **FINAL**.                      2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 20,23,24 and 26 is/are pending in the application.
- 4a) Of the above claim(s) 24 and 26 is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 20 and 23 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All    b) ☐ Some \*    c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |  |   |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892)                     | 4) <input type="checkbox"/> Interview Summary (PTO-413)           |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____                                      |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)          | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____  | 6) <input type="checkbox"/> Other: _____                          |

### **DETAILED ACTION**

This Office Action is in response to the communication filed on 9/24/07. Claims 20, 23, 24 and 26 are pending. Claims 24 and 26 are withdrawn from consideration. This Action is FINAL.

#### ***Election/Restrictions***

Applicant's election without traverse of Group III in Paper No. 10 is acknowledged. Election without traverse of polymer material species "polybutylene terephthalate" and modifier material species " $\gamma$ -(methacryloxypropyl) triethoxy silane" in the response filed on 11/23/04 is acknowledged. Applicant states claims 20 and 23 read on the elected species. Claims 24 and 26 are withdrawn because they are directed toward a nonelected species.

#### ***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 20 and 23 are rejected under 35 U.S.C. 103(a) as being unpatentable over, Tsukuda et al., EP 0 898 316.

Tsukuda teaches a nonaqueous electrolyte battery comprising a porous base of at least one material selected from the group consisting of a porous film, a woven fabric and nonwoven fabric containing organic fiber and a paper. An organometallic compound is applied to the porous base (0032). The porous film is allowed to contact a solution of the organometallic

compound (0046). The porous film may be a polyolefin resin or a fluorocarbon resin, but is not limited (0056). The porous film may be a polyester resin (0059;0062;0141). The organosilicon compound may be  $\gamma$ -methacryloxypropyltrimethoxysilane (0118). Tsukuda teaches applying the organosilicon compound to the porous film improves the heat resistance of the porous film (131). Note polybutylene terephthalate is a polyester resin.

Therefore, the invention as a whole would have been obvious to one having ordinary skill in the art at the time the invention was made because Tsukuda teaches modifying a polyester resin with  $\gamma$ -methacryloxypropyltrimethoxysilane improves the heat resistance of the polyester resin. Therefore, one of skill would have been motivated to modify the polybutylene terephthalate porous film of the claimed invention with the  $\gamma$ -methacryloxypropyltrimethoxy silane modifying agent of Tsukuda to improve the heat resistance of the porous film.

Note Tsukuda does not state a LUMO or HOMO energy value for the organosilicon compound (modifier). However, since the organosilicon compound of Tsukuda and the modifier compound of the instant claims may both be the same compound, Tsukuda inherently teaches the LUMO energy value and HOMO energy value claim limitations. Also  $\gamma$ -methacryloxypropyl trimethoxysilane is an obvious homolog of  $\gamma$ -(methacryloxypropyl) triethoxy silane.

#### ***Response to Arguments***

Applicant's arguments filed 9/24/07 have been fully considered but they are not persuasive.

Applicant argues the "expression in claim 20 means that at least two carbons of the polymer backbone material and at least two carbons of a predetermined substituent are bonded to each other not by ester linkage or ether linkage, but by covalent bonds". Examiner disagrees.

Claim 20 only requires the first modifier is bonded to the modified polymer material via a covalent bond. Claim 20 does not recite the two successive carbon atoms are directly covalently bonded to a carbon atom in the backbone carbon chain of the modified polymer material.

Therefore, the claim interpretation by Applicant is improper.

Applicant argues that Tsukuda teaches away from the claimed invention because the porous film and organosilicon compound are linked via an ester or ether linkage. However, this argument is not persuasive because ester or ether linkages (bonds) are covalent bonds. If Applicant maintains that ester or ether linkages are not covalent bonds, Examiner requests Applicant submit evidence supporting the assertion. Furthermore, Applicant states "covalent bonding can be achieved ...by...heating after coating an initiator on the surface of the porous film". Tsukuda teaches organosilicon compounds are excellent in film-forming ability when dried or cured by heating (0116). Thus, the porous film that is coated with the organosilicon compound and then heated of Tsukuda must also be bound to the coating by covalent bonding. Applicant points to paragraph 0121 of Tsukuda, however, this paragraph states "can react" and is merely a specific embodiment of Tsukuda. The reference is not limited to any particular embodiment. Furthermore, Tsukuda teaches various materials for the porous film and the reference is not limited to any particular material.

### ***Conclusion***

**THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO


MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Tracy Dove whose telephone number is 571-272-1285. The examiner can normally be reached on Monday-Thursday (9:00-7:30).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Pat Ryan can be reached on 571-272-1292. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

November 19, 2007

  
TRACY DOVE  
PRIMARY EXAMINER